## ASSIGNMENT 5

Textbook Assignment: "Construction Equipment Power Trains," chapter 6, pages 6-1 through 6-32.

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5-1. What are the two most common types of drive trains used in modem construction equipment?

1. Mechanical and hydromechanical
2. Pneumatic and mechanical
3. Hydrostatic and mechanical
4. Pneumatic and hydrostatic

5-2. The power shift transmission is coupled to the torque converter through

1. interconnecting splines
2. a swash plate
3. a universal joint
4. a jack shaft

5-3. What power shift transmission shaft has the reverse drive gear keyed to the front of the shaft?

1. Reverse clutch
2. Forward clutch
3. Spline
4. Bevel pinion

5-4. When the high-lo lever of a power shift transmission is shifted, a sliding gear on the spline shaft meshes with gears on what shaft?

1. Reverse clutch
2. Forward clutch
3. Spline
4. Bevel pinion

5-5. The pinion gear that is splined to the bevel pinion shaft is adjusted for pinion depth by adding shims.

1. True
2. False

5-6. What two pistons are the heart of the forward and reverse hydraulic clutch in a power shift transmission?

1. Center and knock-off
2. Accelerator and force
3. Sintered and backing
4. Separator and drum

5-7. Upon application of the hydraulic clutch, main oil pressure is directed through which of the following components?

1. Clutch shaft
2. Force piston cavity
3. Accelerator piston cavity
4. Drive gear and drum

5-8. Before shifting the hi-lo-shifting lever in the power shift transmission, you must put the gearshift lever in neutral while the engine is running.

1. True
2. False

5-9. What component is the center gear in a planetary gearset?

1. Planet pinion
2. Ring gear
3. Sun gear
4. Planetary carrier

5-10. How many different ways can the planetary gearset be engaged to either increase or decrease torque?

1. Six
2. Two
3. Eight
4. Four

5-11. In a planetary gearset, direct drive is achieved by locking

1. the planetary carrier
2. the planet pinion
3. the ring gear
4. any two members together

5-12. In a planetary steering system, the sun gear, machined to the steering brake hub, performs the same function as what component in a conventional planetary system?

1. Pinion gear
2. Planetary gear
3. Carrier gear
4. Ring gear

5-13. In a planetary steering system, braking prevents what action?

1. The sprocket drive shaft and steering brake hub from rotating
2. The steering brake hub and sun gear from rotating
3. Transmitting power from the sun gear to the sprocket drive shaft
4. The pinion gears from walking around the sun gear on the steering brake hub

5-14. Adjusting the steering brakes of a planetary steering system is required because it provides what advantage?

1. Even braking
2. Prevents slippage
3. Even lining wear
4. Prevents brake pull

5-15. The actuating disc assembly of the pivot brakes on tracked equipment is made up of what components?

1. Three discs that have laminated linings
2. Two smooth discs held in position by studs
3. Two steel plates splined to the sprocket drive
4. Two steel plates with steel balls between them

5-16. In a hydrostatic drive train, mechanical power from the engine is converted to hydraulic power by what components?

1. Piston and cylinder
2. Swash plate and displacement control valve
3. Pump and motor
4. Charge pump and cylinder block

5-17. A hydrostatic drive is designed to accomplish the functions of both a clutch and a transmission.

1. True
2. False

5-18. What component of a hydrostatic drive train can have its angle varied so the volume and pressure of oil pumped by the pistons can be changed or the direction of the oil reversed?

1. Displacement control valve
2. Low charge pressure control valve
3. Shuttle valve
4. Swash plate

5-19. In a hydrostatic drive train, what pump-motor combination will provide variable speed and constant torque?

1. A fixed displacement pump and fixed displacement motor
2. A variable displacement pump and fixed displacement motor
3. A fixed displacement pump and variable displacement motor
4. A variable displacement pump and variable displacement motor

5-20. In a hydrostatic drive train, what pump-motor combination is the most flexible, but is also the most difficult to control?

1. A fixed displacement pump and fixed displacement motor
2. A variable displacement pump and fixed displacement motor
3. A fixed displacement pump and variable displacement motor
4. A variable displacement pump and variable displacement motor

5-21. Which of the following factors has no bearing on the control of the operations of a hydrostatic drive?

1. Rate of oil flow
2. Direction of oil flow
3. Pressure of the oil
4. Quality of the oil

5-22. Of the following advantages, which one is NOT provided by a hydrostatic drive?

1. Low torque available for starting up
2. Smooth shifting
3. Low maintenance and service
4. Shifts "on-the go"

5-23. In a hydrostatic drive, what design feature determines the volume of oil displaced per revolution of the pump?

1. Speed of the engine
2. Angle of the swash plate
3. Alignment of the pump pistons and the outlet port
4. Action of the high charge pressure control valve

5-24. What valve, located in the motor manifold, monitors the pressure of the forward flow of oil and protects the system from exceeding the rated psi?

1. Inlet check
2. High-pressure relief
3. Shuttle
4. Low charge pressure control

5-25. In a hydrostatic drive system the pump drive shaft and cylinder block always rotates clockwise; however, the motor drive shaft and cylinder block may rotate either clockwise or counterclockwise.

1. True
2. False

5-26. What are the two major components of the undercarriage on crawler-mounted equipment?

1. Track assembly and front idler
2. Track frame and drive sprocket
3. Front idler and drive sprocket
4. Track frame and track assembly

5-27. The length of a track will gradually increase during normal use as a result of wear on the

1. track assembly and track frame
2. track links
3. sprocket and idler
4. pins and bushings

5-28. Which of the following measurements are used to determine the wear of a track assembly?

1. Bushing diameter and track pitch
2. Pin diameter and track pitch
3. Link width and bushing diameter
4. Chain length and link width

5-29. How many track links should you measure across when checking track pitch?

1. Five
2. Two
3. Three
4. Four

5-30. What track frame components maintains alignment of the track assembly as it passes over the track frame?

1. Track rollers
2. Guiding guards
3. Front idler
4. Carrier rollers

5-31. The operation of the recoil springs depends upon what factor?

1. Amount of tension on the idler
2. Amount of tension on the sprocket
3. Amount of tension on the track
4. Amount of tension on the track frame

5-32. To relieve tension on the track of a modem crawler tractor, you should take what action?

1. Back off the adjusting nut on the idler yoke
2. Add shims in front of the recoil spring
3. Loosen the vent screw on the track adjuster
4. Loosen and slide the carrier rollers forward

5-33. What track guiding guards reduce the wear on the roller flanges and track links?

1. Front
2. Rear
3. Center
4. Bottom

5-34. Friction in a tight track robs the crawler tractor of needed horsepower.

1. True
2. False

5-35. When the track on a crawler tractor is too loose, it will have a tendency to

1. cause the idler to wear rapidly
2. come off when the tractor is turned
3. damage track rollers
4. increase pin and bushing wear

5-36. When it becomes necessary to adjust the track in the field, you should remove all the slack in the track and release the pressure until the front idler moves back a 1/2 inch.

1. True
2. False

5-37. When inspecting a piece of tracked equipment, you notice that the track is out of alignment. What person determines what action should be taken?

1. Inspector
2. Crew leader
3. Operator of the track
4. Shop supervisor

5-38. When removing a track, you can easily identify the master pin because it

1. is larger than the other pins
2. has a locking device or a hole drilled in its end
3. has a capital "M" cast into the end
4. has three stripes engraved on it

5-39. Before replacing any components of the track or track frame, you should consult what publication?

1. NAVFAC P-300
2. NAVFAC P-306
3. NAVFAC P-458
4. The manufacturer's service manual

5-40. In the NCF, what publication contains the guidelines for the maintenance and use of wire rope?

1. COMSECOND/COMTHIRD INST 11200.1
2. NAVFAC P-404
3. NAVFAC P-458
4. NAVFAC P-306

5-41. The typical front-mounted winch is classified as what type of winch?

1. Sliding-clutch worm gear
2. Sliding-collar worm gear
3. Jaw-clutch worm gear
4. Sliding-jaw worm gear

5-42. What component protects a winch from being overloaded?

1. Clutch key
2. Worm-gear key
3. Shear pin
4. Handle pin

5-43. What brake prevents the drum from overrunning the cable when the cable is being unreeled?

1. Worm
2. Shifter-bracket
3. Winch support
4. Shift lever

5-44. Failure of the winch to operate is usually the result of what component being broken or damaged?

1. Drive shaft
2. Shear pin
3. Universal joint
4. PTO gear

5-45. A wire rope that has strands or wires that are shaped to conform to the curvature of the finished rope is known as

1. non-preformed wire rope
2. non-conformed wire rope
3. preformed wire rope
4. conformed wire rope

5-46. Which of the following components is NOT part of the construction of a wire rope?

1. Wires
2. Strands
3. Core
4. Filler

5-47. Wire rope is designated by the number of strands per rope and what other factor?

1. Length of the strand
2. Diameter of the strand
3. Number of wires per strand
4. Number of strands per wire

5-48. What type of strand construction has alternating large and small wires that provide a combination of great flexibility with a strong resistance to abrasion?

1. Ordinary
2. Seale
3. Warrington
4. Filler

5-49. What type of wire rope core is a separate wire rope over which the main strands of the rope are laid?

1. Fiber
2. Wire strand
3. Unconstrained
4. Independent

5-50. Each square inch of improved plow steel wire rope can withstand a strain that is within what range, in pounds of pressure?

1. Between 100,000 to 120,000
2. Between 240,000 to 260,000
3. Between 300,000 to 320,000
4. Between 440,000 to 460,000

5-51. What type of wire rope lays has the wires in the strands laid to the right, while the strands are laid to the left to form the wire rope?

1. Left lang lay
2. Right regular lay
3. Right lang lay
4. Left regular lay

5-52. Because it is very flexible, what type of wire rope is acceptable for use on cranes?

1. 6 x 37
2. 6 x 24
3. 6 x 19
4. 6 x 12

5-53. What wire rope characteristic includes a reserve of strength as a safety factor?

1. Crushing strength
2. Fatigue resistance
3. Tensile strength
4. Wear resistance

5-54. When measuring the diameter of wire rope, you should measure what number of places at what minimum distance apart?

1. 5 places at least 4 feet apart
2. 2 places at least 10 feet apart
3. 3 places at least 5 feet apart
4. 4 places at least 2 feet apart

5-55. Which of the following mistakes is NOT a common cause of wire rope failure?

1. Dragging over obstacles
2. Improper coiling
3. Cross winding on drums
4. Using an excessive fleet angle

5-56. What type of wire rope damage starts with the formation of a loop?

1. Crush spots
2. Wear spots
3. Kinks
4. Broken wires

5-57. Too large of a fleet angle can cause a wire rope to climb the flange of a sheave.

1. True
2. False

5-58. In wire rope rigging, the diameter of the sheave should never be less than how many times the diameter of the wire rope?

1. 10
2. 20
3. 30
4. 40

5-59. What total number of seizing is required for seizing a 7/8-inch wire rope?

1. One
2. Two
3. Three
4. Four

5-60. Which of the following conditions will shorten the service life of wire rope?

1. Excessive fleet angle
2. Lack of lubrication
3. Improper lay
4. Reverse bends

5-61. When you are working in the field, what wire rope lubricant ratio is recommended?

1. 70-percent diesel fuel to 30-percent new motor oil
2. 70-percent used motor oil to 30-percent diesel fuel
3. 70-percent gasoline to 30-percent used motor oil
4. 70-percent new motor oil to 30-percent diesel fuel

5-62. Speltering is the technique of attaching a socket to a wire rope by pouring hot zinc around it.

1. True
2. False

5-63. What type of wire rope attachment is used to make eyes in wire rope?

1. Wedge socket
2. Wire rope clips
3. Mousing
4. Speltered socket

5-64. To form an eye with a 3/4-inch wire rope requires what total number of wire rope clips?

1. One
2. Two
3. Three
4. Four

5-65. Wire rope eyes with thimbles and wire rope clips can hold approximately what percentage of the strength of a wire rope?

1. 60
2. 70
3. 80
4. 90

5-66. At a swaged connection, what is the maximum amount of broken wires allowed before the fitting should be replaced?

1. One
2. Two
3. Three
4. Four

5-67. When a swaged connection is made properly, it will provide what percentage of the capacity of the wire rope?

1. 75
2. 80
3. 90
4. 100

5-68. A bent hook should be straightened by heating it with a torch.

1. True
2. False

5-69. Hooks should always be inspected before lifting a full-rated load.

1. True
2. False

5-70. What are the two types of shackles used in rigging?

1. Screw pin and round pin
2. Mousing and bow
3. Anchor and chain
4. Ring and thimble